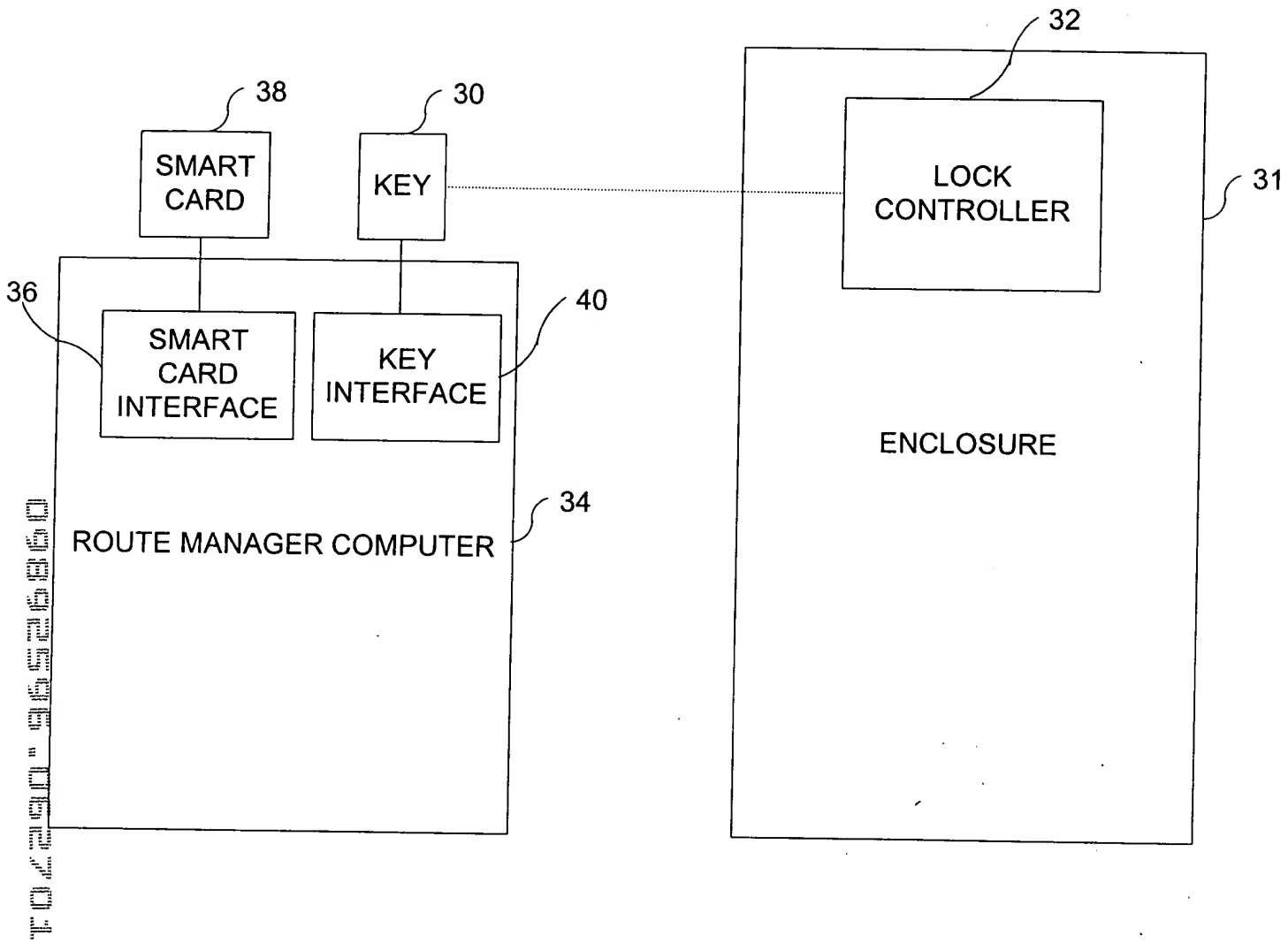
32
38
30
SMART CARD
KEY
LOCK CONTROLLER
31
36
40
SMART CARD INTERFACE
KEY INTERFACE
ENCLOSURE
34
ROUTE MANAGER COMPUTER

FIG. 1

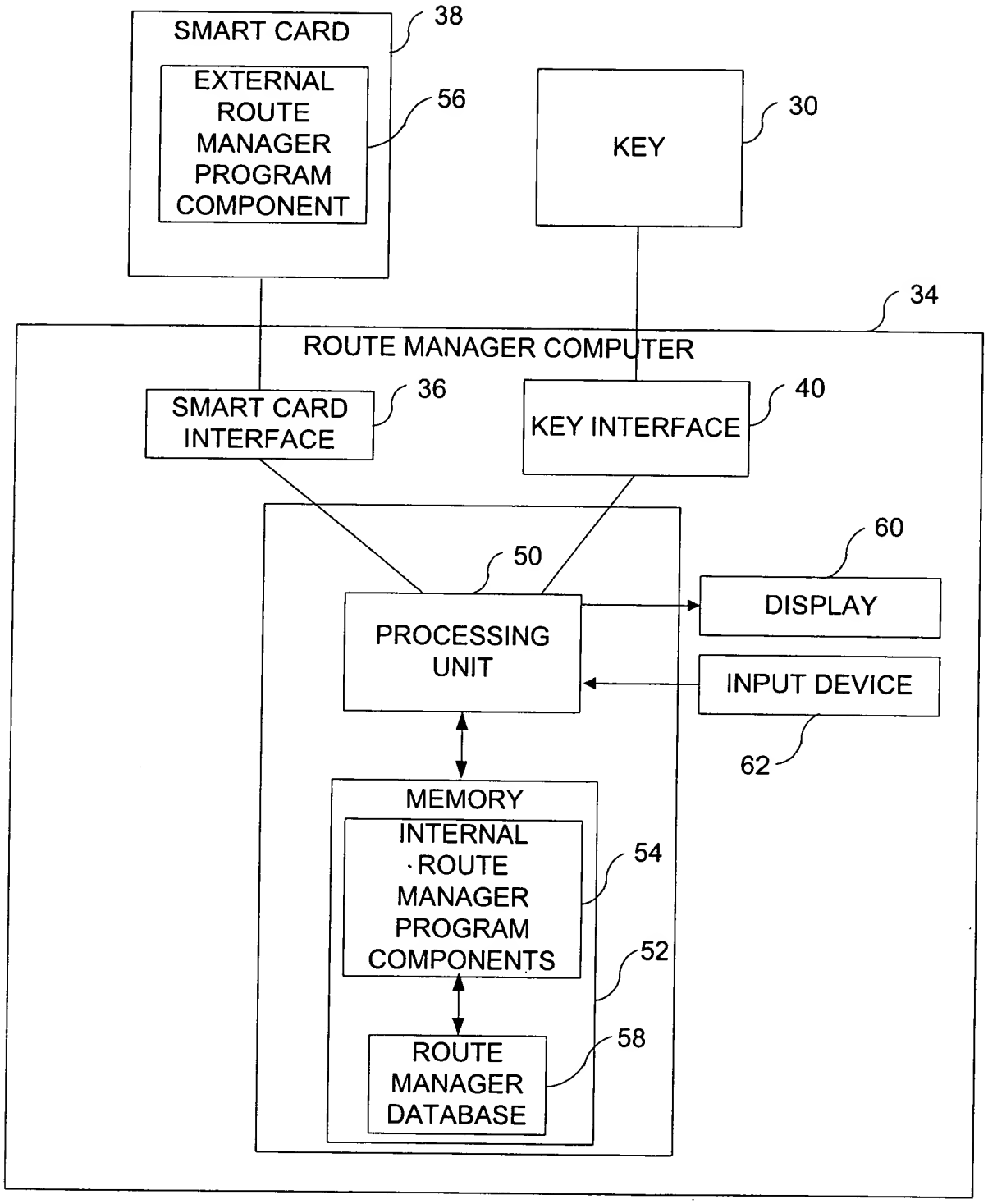
SMART CARD
38
EXTERNAL ROUTE MANAGER PROGRAM COMPONENT
56
KEY
30
34
ROUTE MANAGER COMPUTER
SMART CARD INTERFACE
36
KEY INTERFACE
40
50
PROCESSING UNIT
60
DISPLAY
INPUT DEVICE
62
MEMORY
INTERNAL ROUTE MANAGER PROGRAM COMPONENTS
54
52
ROUTE MANAGER DATABASE
58

FIG. 2

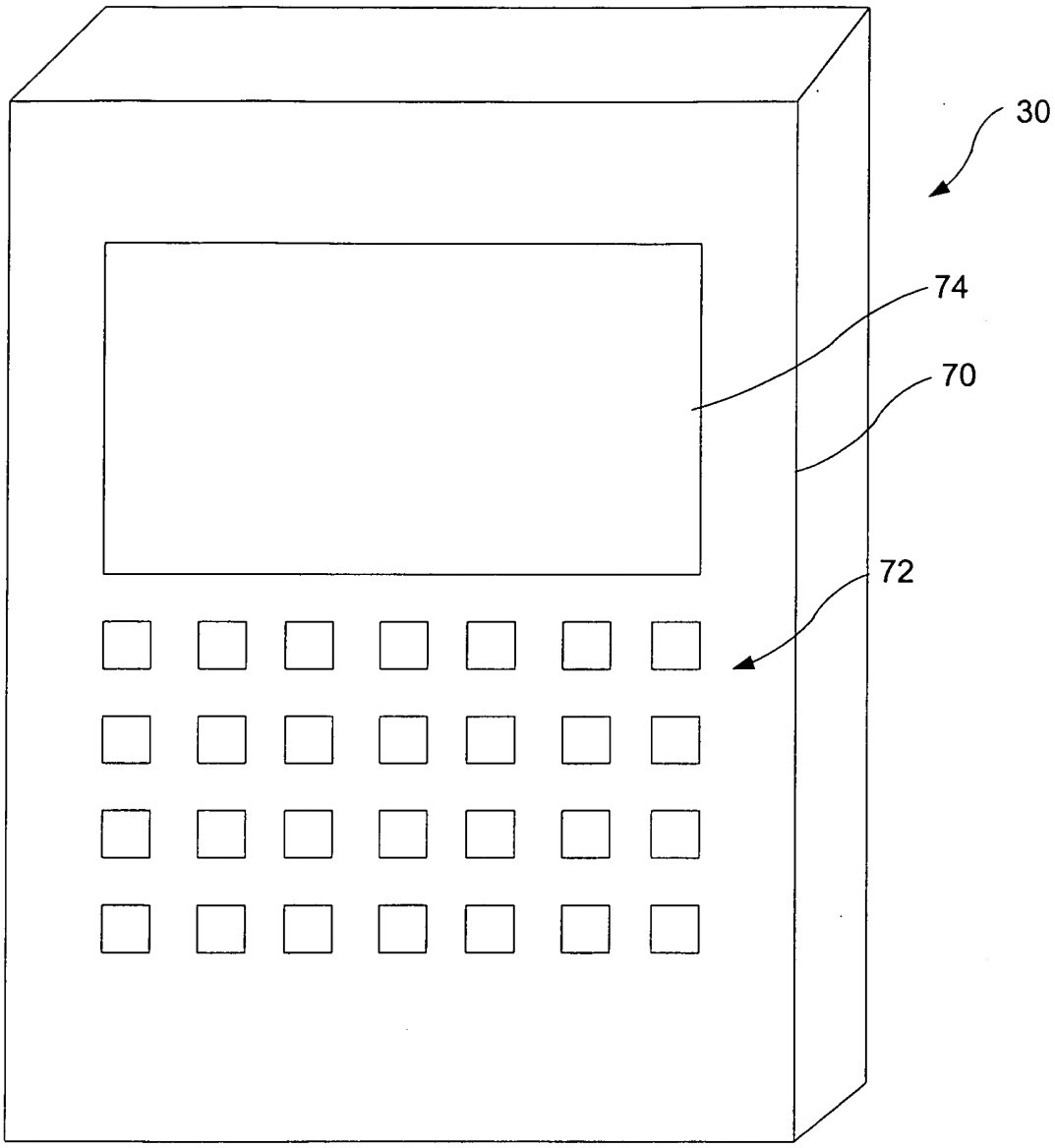

FIG. 3

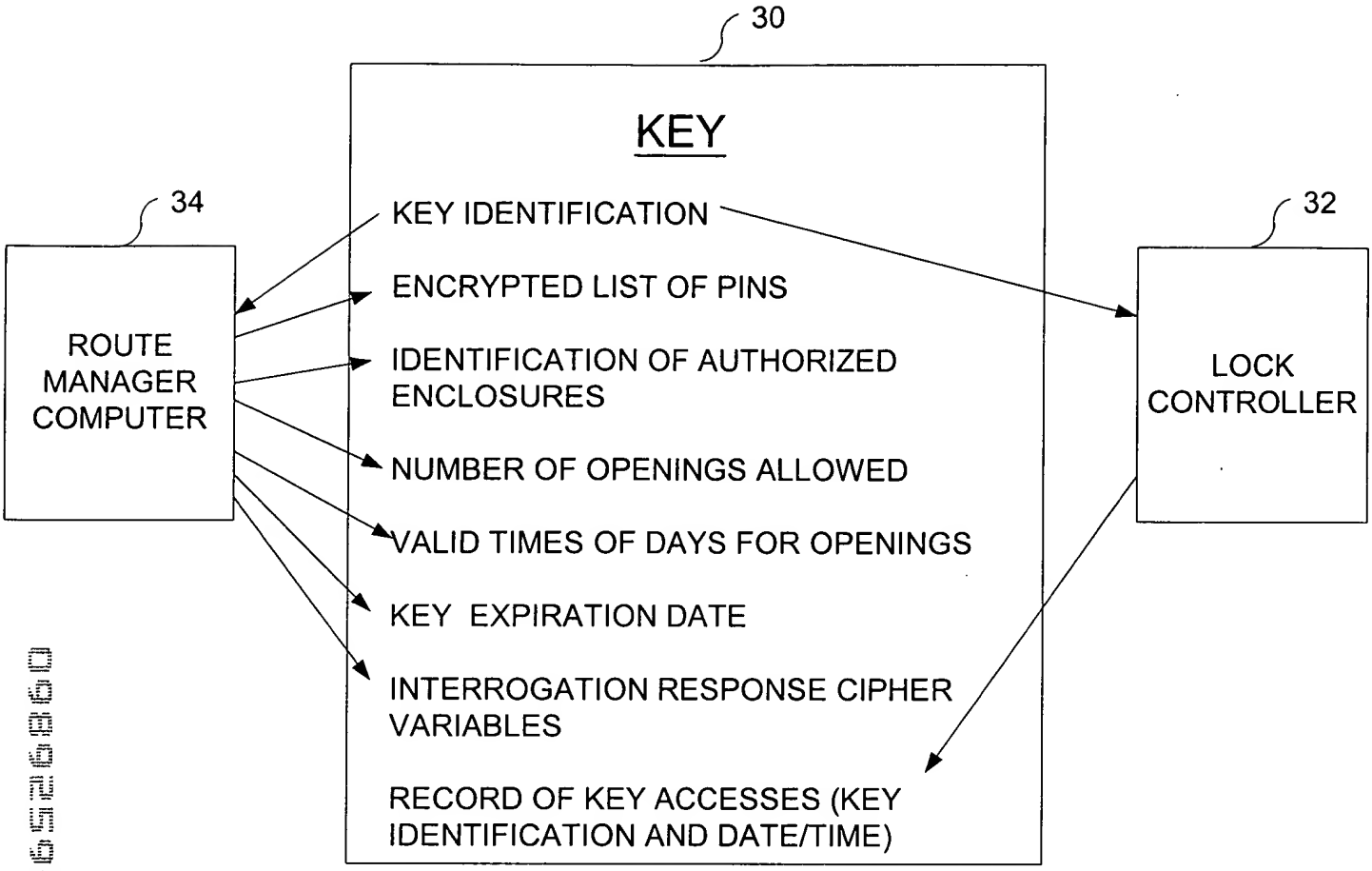
30
KEY
34
KEY IDENTIFICATION
32
ENCRYPTED LIST OF PINS
ROUTE MANAGER COMPUTER
IDENTIFICATION OF AUTHORIZED ENCLOSURES
LOCK CONTROLLER
NUMBER OF OPENINGS ALLOWED
VALID TIMES OF DAYS FOR OPENINGS
KEY EXPIRATION DATE
INTERROGATION RESPONSE CIPHER VARIABLES
RECORD OF KEY ACCESSES (KEY IDENTIFICATION AND DATE/TIME)

FIG. 4

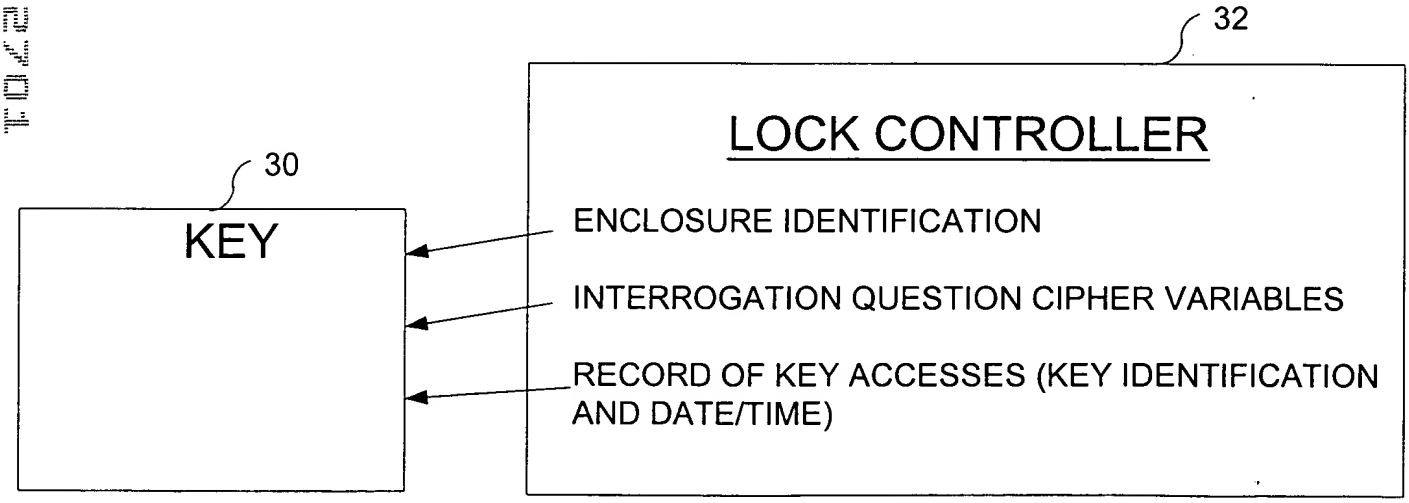
32
LOCK CONTROLLER
30
KEY
ENCLOSURE IDENTIFICATION
INTERROGATION QUESTION CIPHER VARIABLES
RECORD OF KEY ACCESSES (KEY IDENTIFICATION AND DATE/TIME)

FIG. 5

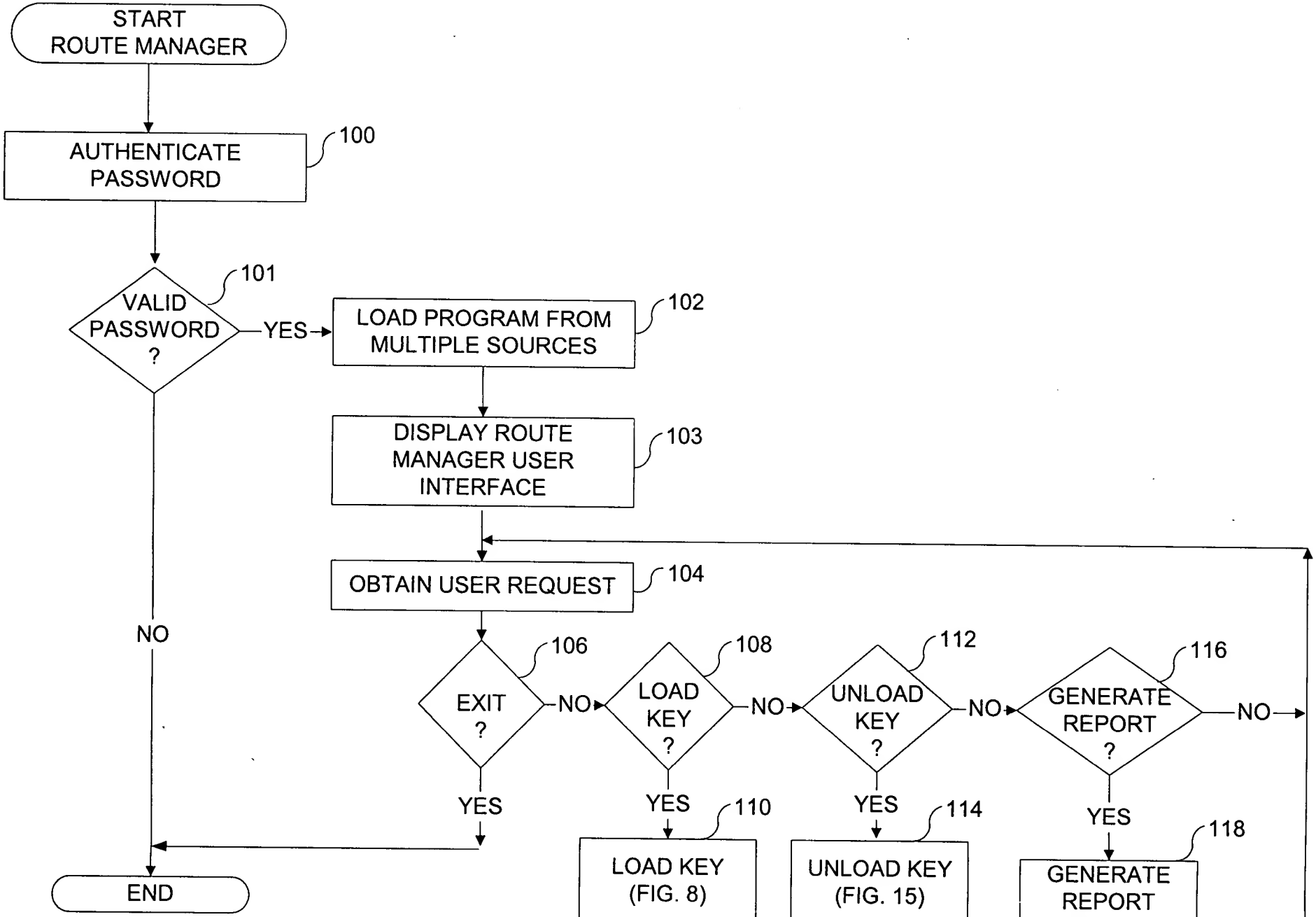
START ROUTE MANAGER
AUTHENTICATE PASSWORD
100
VALID PASSWORD ?
101
YES
LOAD PROGRAM FROM MULTIPLE SOURCES
102
DISPLAY ROUTE MANAGER USER INTERFACE
103
OBTAIN USER REQUEST
104
NO
EXIT ?
106
NO
LOAD KEY ?
108
NO
UNLOAD KEY ?
112
NO
GENERATE REPORT ?
116
NO
YES
YES
YES
YES
LOAD KEY (FIG. 8)
110
UNLOAD KEY (FIG. 15)
114
GENERATE REPORT (FIG. 17)
118
END

FIG. 6

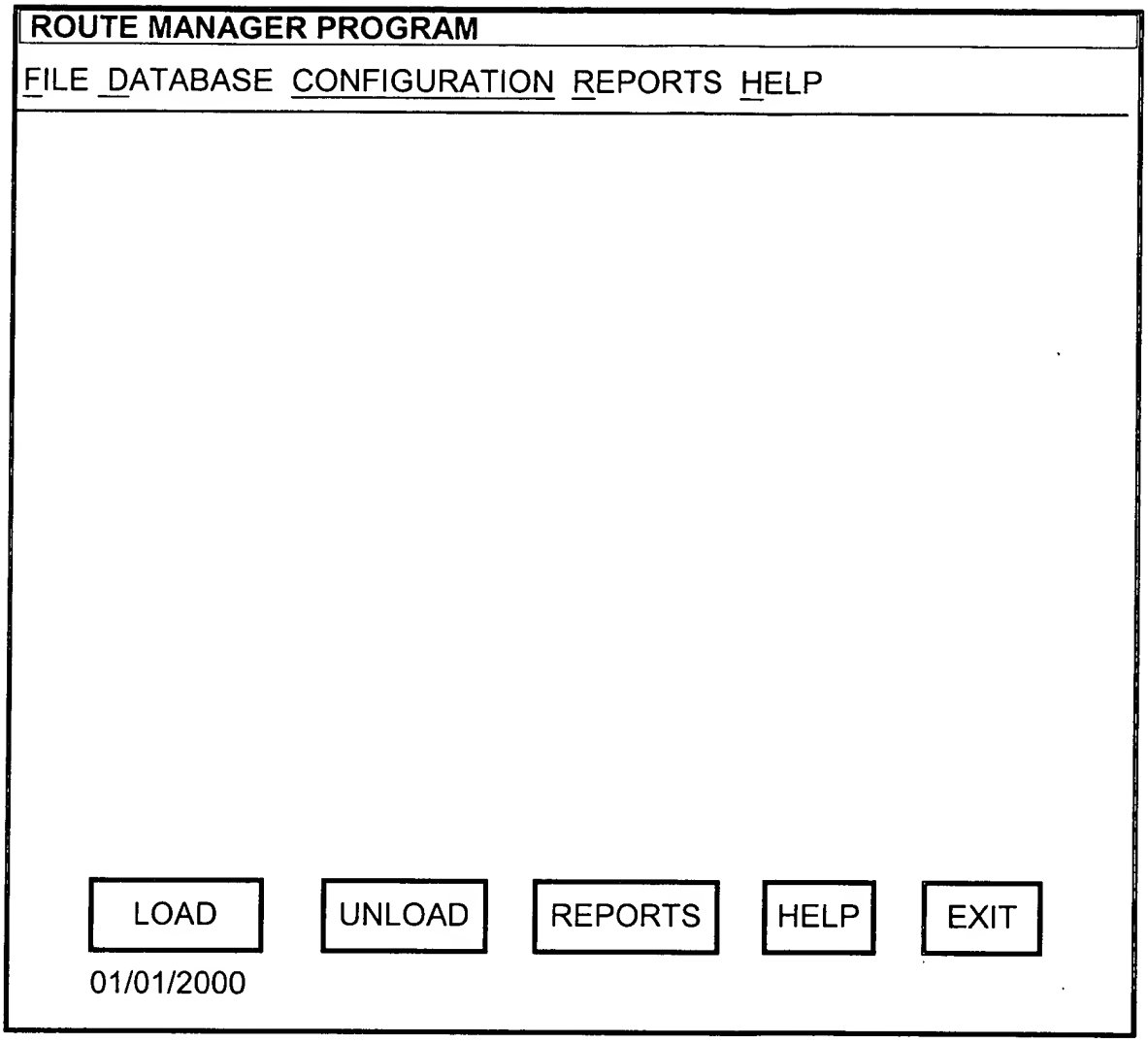

FIG. 7

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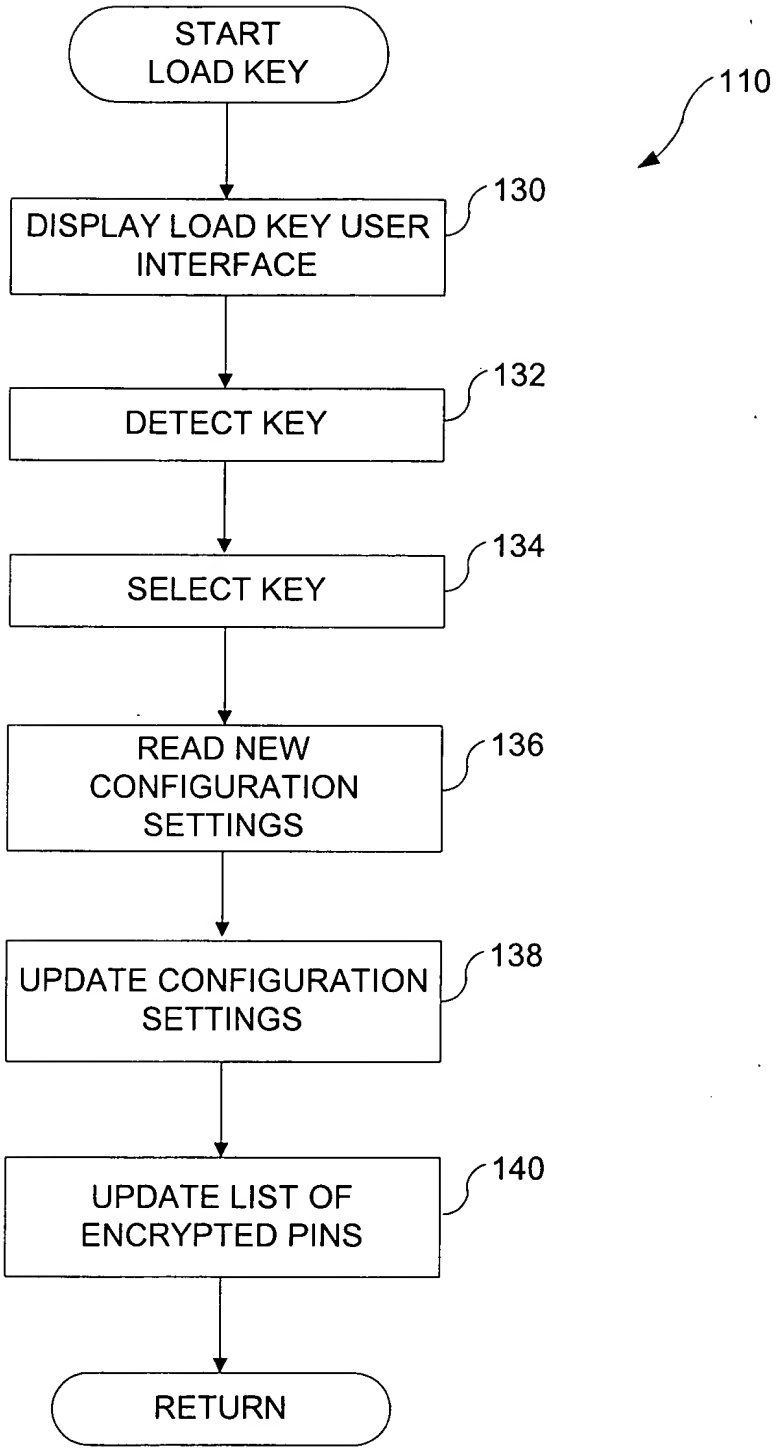
START
LOAD KEY
110
DISPLAY LOAD KEY USER INTERFACE
130
DETECT KEY
132
SELECT KEY
134
READ NEW CONFIGURATION SETTINGS
136
UPDATE CONFIGURATION SETTINGS
138
UPDATE LIST OF ENCRYPTED PINS
140
RETURN

FIG. 8

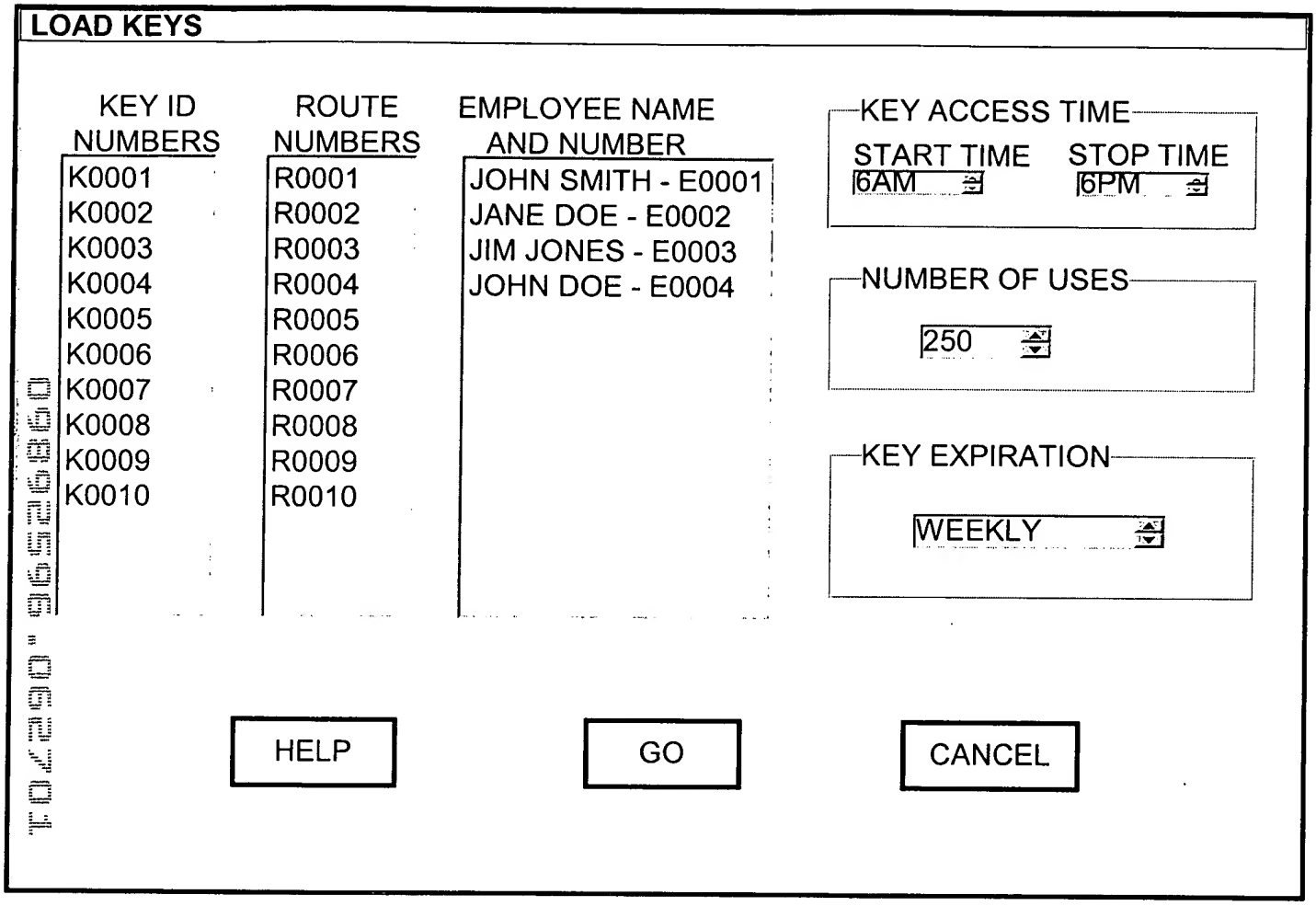
LOAD KEYS
KEY ID NUMBERS
K0001
K0002
K0003
K0004
K0005
K0006
K0007
K0008
K0009
K0010
ROUTE NUMBERS
R0001
R0002
R0003
R0004
R0005
R0006
R0007
R0008
R0009
R0010
EMPLOYEE NAME AND NUMBER
JOHN SMITH - E0001
JANE DOE - E0002
JIM JONES - E0003
JOHN DOE - E0004
KEY ACCESS TIME
START TIME
6AM
STOP TIME
6PM
NUMBER OF USES
250
KEY EXPIRATION
WEEKLY
HELP
GO
CANCEL

FIG. 9

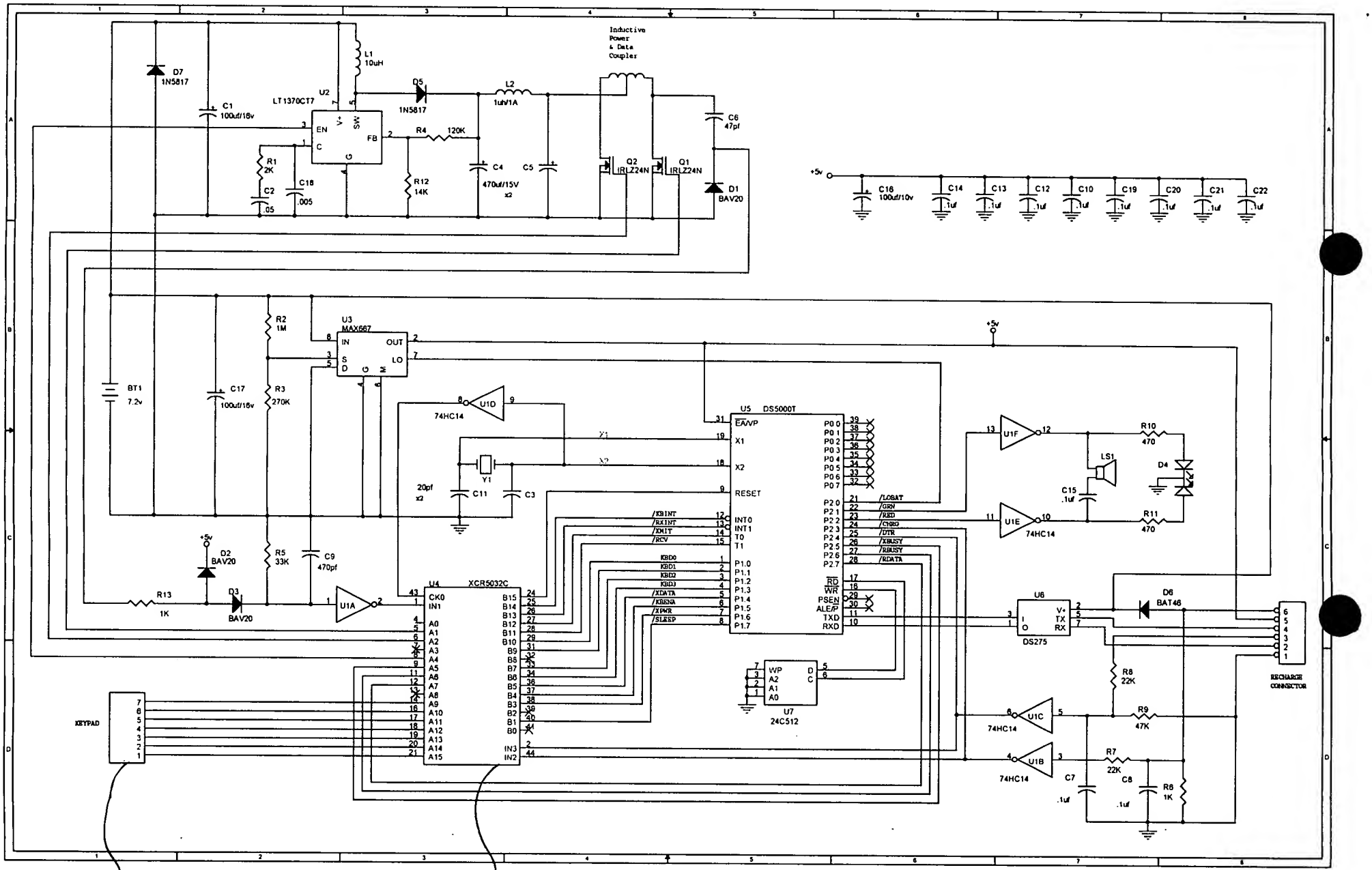
Inductive
Power
& Data
Coupler
D7
1N5817
C1
100uf/16v
U2
LT1370CT7
L1
10uH
D5
1N5817
L2
1uh/1A
C6
47pf
R4
120K
R1
2K
C2
.05
C18
.005
R12
14K
C4
470uf/15V
x2
C5
Q2
IRLZ24N
Q1
IRLZ24N
D1
BAV20
+5v
C16
100uf/10v
C14
.1uf
C13
.1uf
C12
.1uf
C10
.1uf
C19
.1uf
C20
.1uf
C21
.1uf
C22
.1uf
R2
1M
U3
MAX667
BT1
7.2v
C17
100uf/16v
R3
270K
U1D
74HC14
U5 DS5000T
EA/VP
X1
X2
RESET
INT0
INT1
T0
T1
P1.0
P1.1
P1.2
P1.3
P1.4
P1.5
P1.6
P1.7
P0.0
P0.1
P0.2
P0.3
P0.4
P0.5
P0.6
P0.7
P2.0
P2.1
P2.2
P2.3
P2.4
P2.5
P2.6
P2.7
RD
WR
PSEN
ALE/P
TXD
RXD
Y1
20pf
x2
C11
C3
/KB1NT
/RX1NT
/XM1T
/RCV
KBD0
KBD1
KBD2
KBD3
/XDATA
/KBENA
/XPWR
/SLEEP
/LOBAT
/GRN
/RED
/CHRG
/DTR
/XBUSY
/RBUSY
/RDATA
U1F
U1E
74HC14
R10
470
R11
470
LS1
D4
C15
.1uf
D2
BAV20
R5
33K
C9
470pf
R13
1K
D3
BAV20
U1A
U4 XCR5032C
CK0
IN1
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
A15
B15
B14
B13
B12
B11
B10
B9
B8
B7
B6
B5
B4
B3
B2
B1
B0
IN3
IN2
U7
24C512
WP
A2
A1
A0
U6
DS275
V+
TX
RX
D6
BAT46
R8
22K
R9
47K
U1C
74HC14
U1B
74HC14
R7
22K
C7
.1uf
C8
.1uf
R6
1K
KEYPAD
RECHARGE
CONNECTOR
82
80

Fig. 10

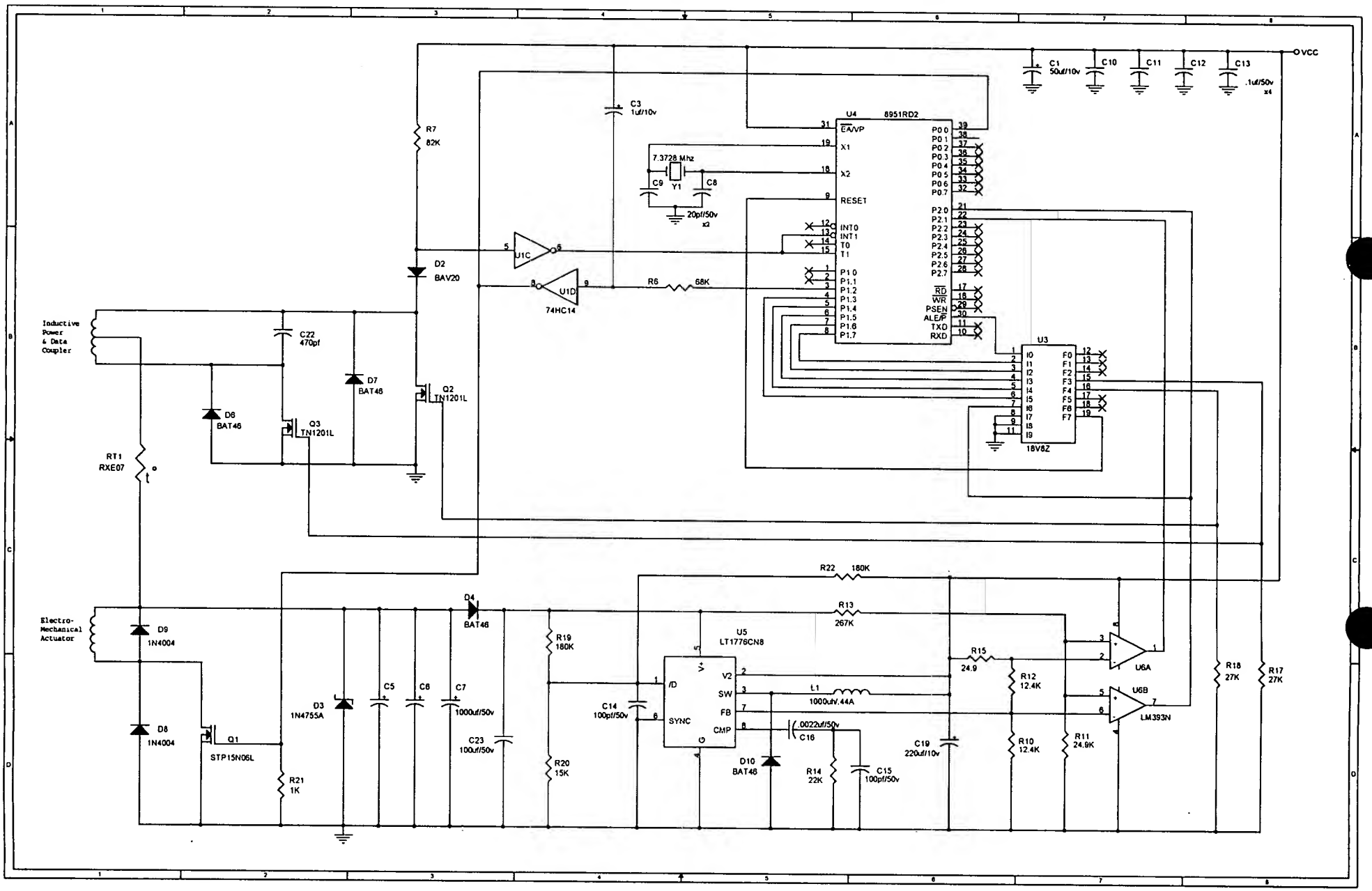
VCC
C1 50uf/10v
C10
C11
C12
C13 .1uf/50v x4
C3 1uf/10v
R7 82K
U4 8951RD2
EA/VP
X1
X2
RESET
7.3728 Mhz
C9
Y1
C8
20pf/50v x2
INT0
INT1
T0
T1
P1.0
P1.1
P1.2
P1.3
P1.4
P1.5
P1.6
P1.7
P2.0
P2.1
P2.2
P2.3
P2.4
P2.5
P2.6
P2.7
RD
WR
PSEN
ALE/P
TXD
RXD
P0.0
P0.1
P0.2
P0.3
P0.4
P0.5
P0.6
P0.7
U1C
U1D
74HC14
D2 BAV20
R6 68K
U3
18V8Z
Inductive Power & Data Coupler
C22 470pf
D7 BAT46
Q2 TN1201L
D6 BAT46
Q3 TN1201L
RT1 RXE07
R22 180K
R13 267K
D4 BAT46
Electro-Mechanical Actuator
D9 1N4004
D8 1N4004
Q1 STP15N06L
D3 1N4755A
C5
C6
C7 1000uf/50v
C23 100uf/50v
R21 1K
R19 180K
R20 15K
U5 LT1776CN8
/D
SYNC
V2
SW
FB
CMP
C14 100pf/50v
L1 1000uh/.44A
C16 .0022uf/50v
D10 BAT46
R14 22K
C15 100pf/50v
C19 220uf/10v
R15 24.9
R12 12.4K
R10 12.4K
R11 24.9K
U6A
U6B
LM393N
R18 27K
R17 27K

FIG. 11

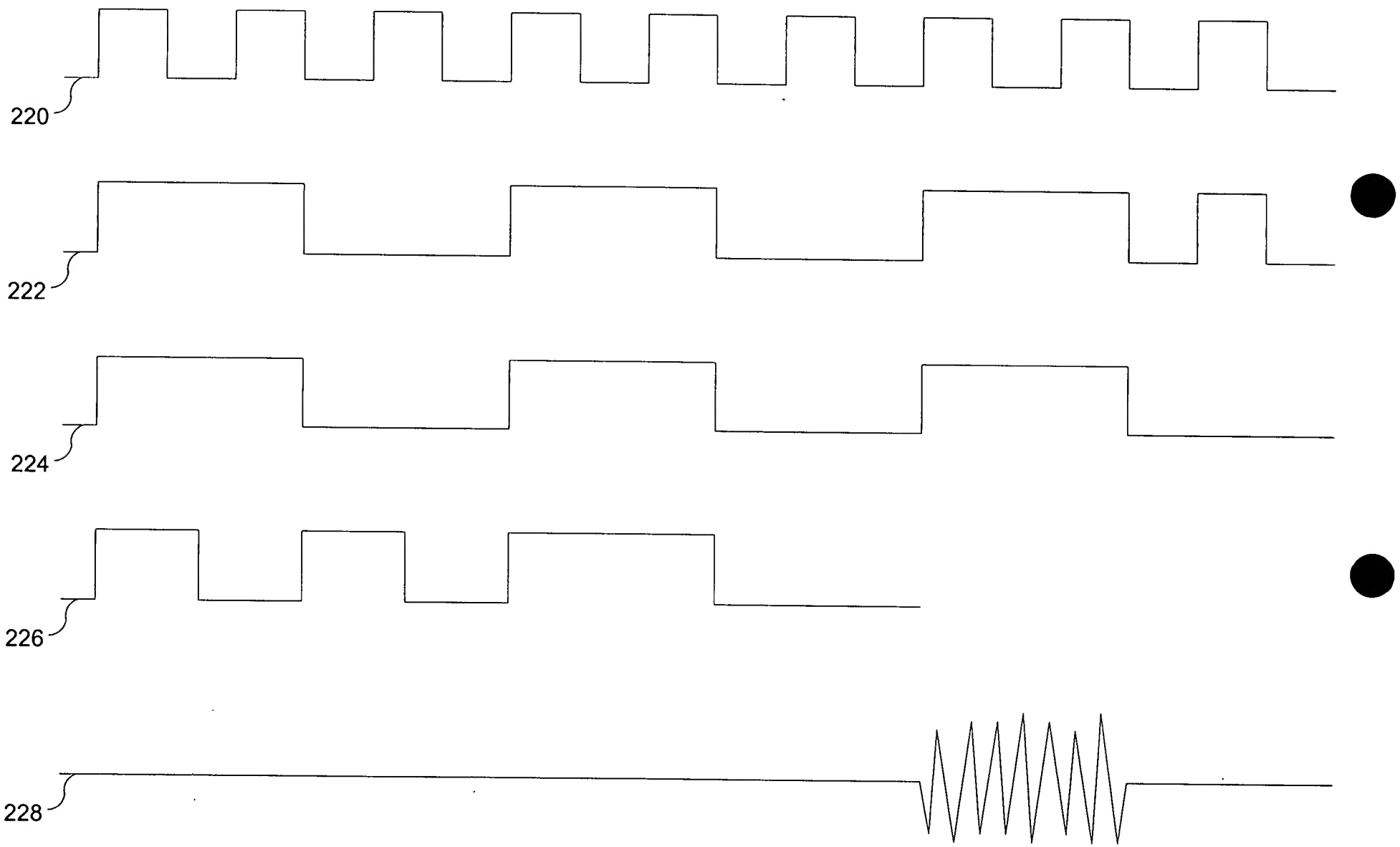

FIG. 12

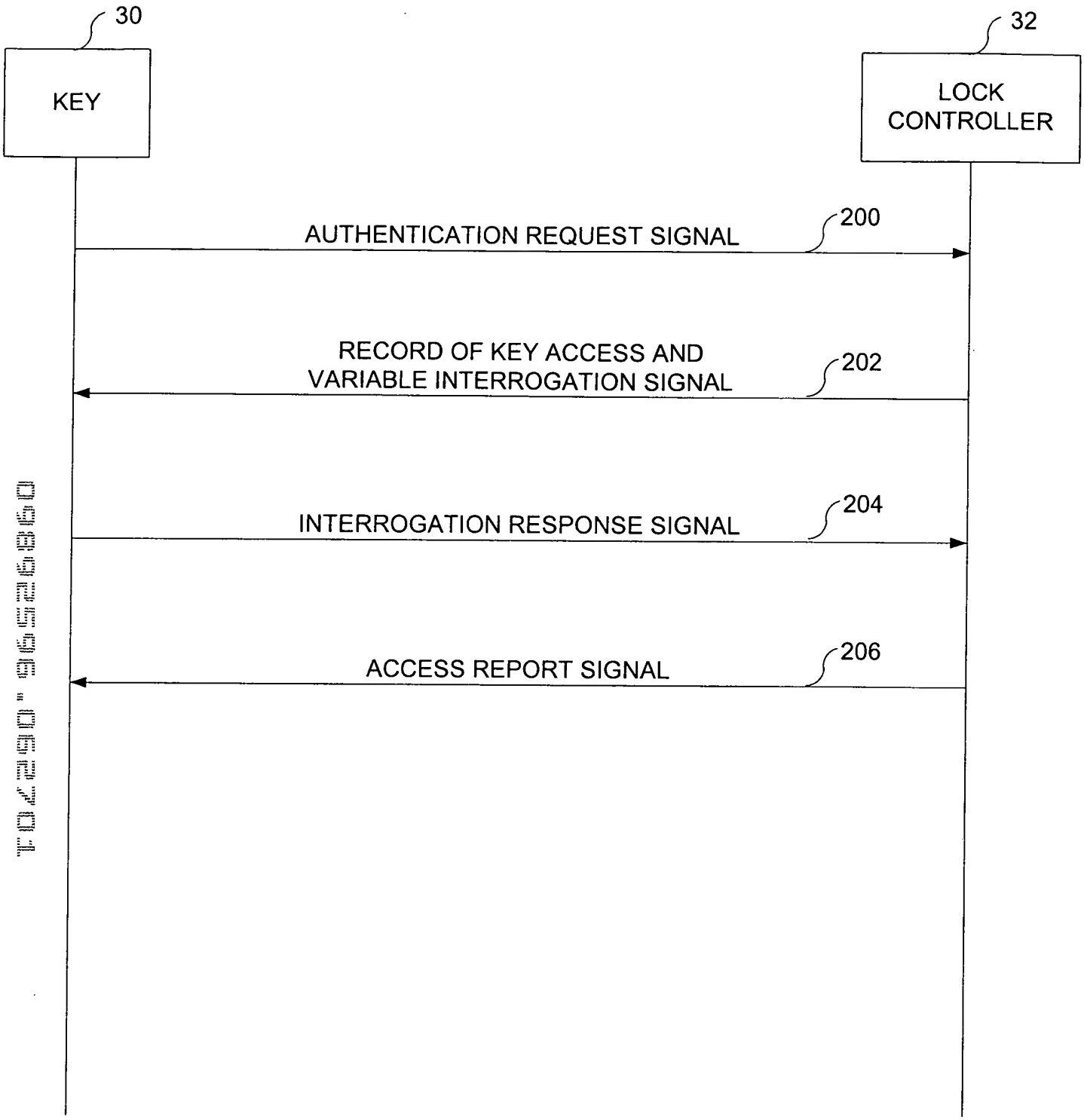
30
KEY
32
LOCK CONTROLLER
AUTHENTICATION REQUEST SIGNAL
200
RECORD OF KEY ACCESS AND VARIABLE INTERROGATION SIGNAL
202
INTERROGATION RESPONSE SIGNAL
204
ACCESS REPORT SIGNAL
206

FIG. 13

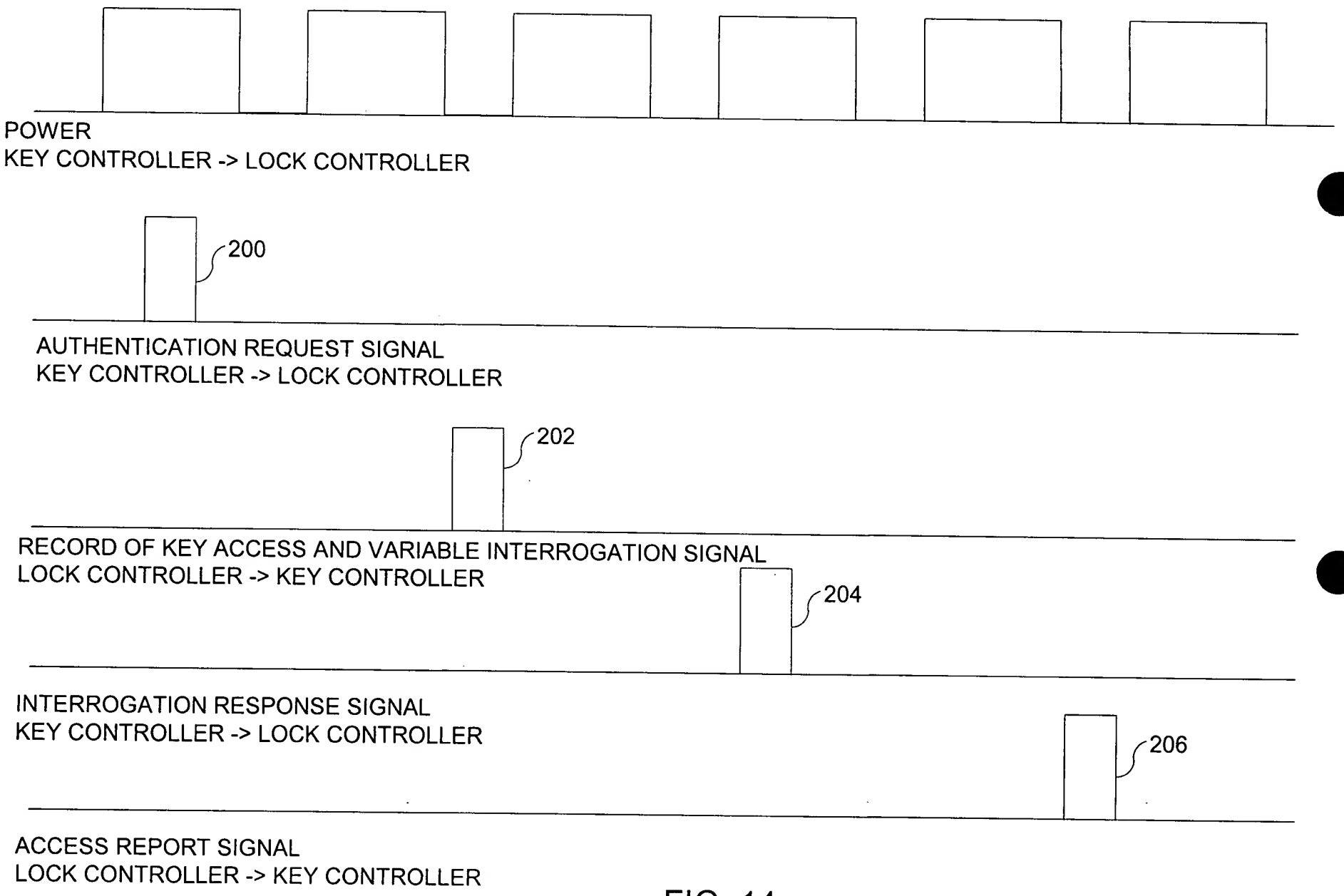
POWER
KEY CONTROLLER -> LOCK CONTROLLER
200
AUTHENTICATION REQUEST SIGNAL
KEY CONTROLLER -> LOCK CONTROLLER
202
RECORD OF KEY ACCESS AND VARIABLE INTERROGATION SIGNAL
LOCK CONTROLLER -> KEY CONTROLLER
204
INTERROGATION RESPONSE SIGNAL
KEY CONTROLLER -> LOCK CONTROLLER
206
ACCESS REPORT SIGNAL
LOCK CONTROLLER -> KEY CONTROLLER

FIG. 14

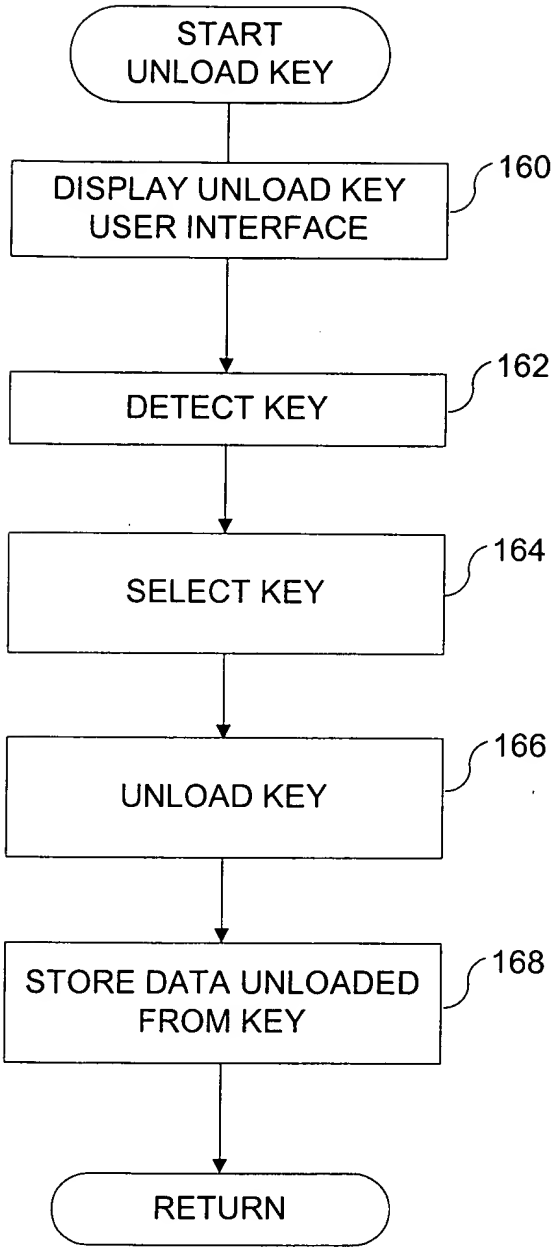
START
UNLOAD KEY
114
DISPLAY UNLOAD KEY
USER INTERFACE
160
DETECT KEY
162
SELECT KEY
164
UNLOAD KEY
166
STORE DATA UNLOADED
FROM KEY
168
RETURN

FIG. 15

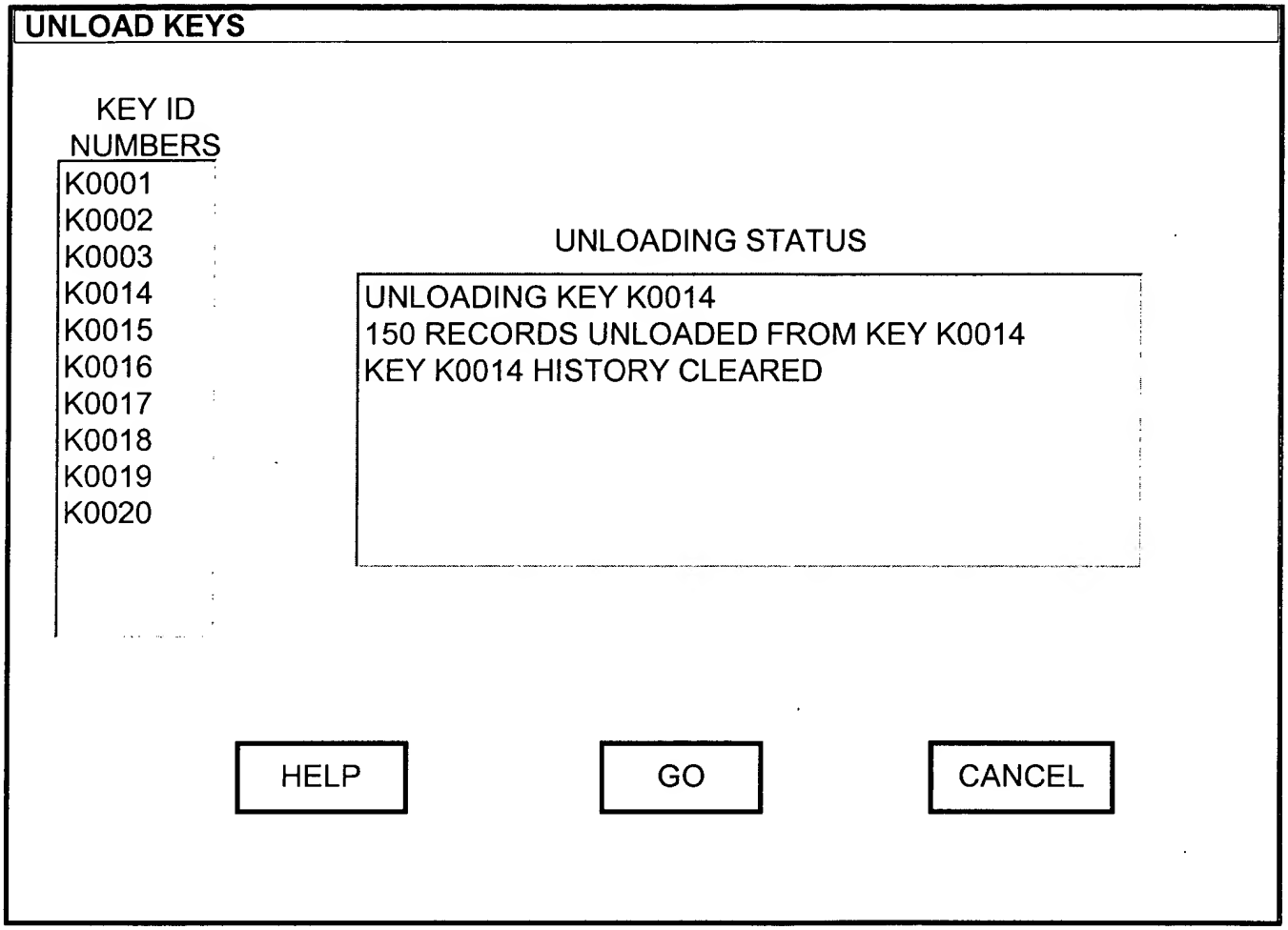
UNLOAD KEYS
KEY ID NUMBERS
K0001
K0002
K0003
K0014
K0015
K0016
K0017
K0018
K0019
K0020
UNLOADING STATUS
UNLOADING KEY K0014
150 RECORDS UNLOADED FROM KEY K0014
KEY K0014 HISTORY CLEARED
HELP
GO
CANCEL

FIG. 16

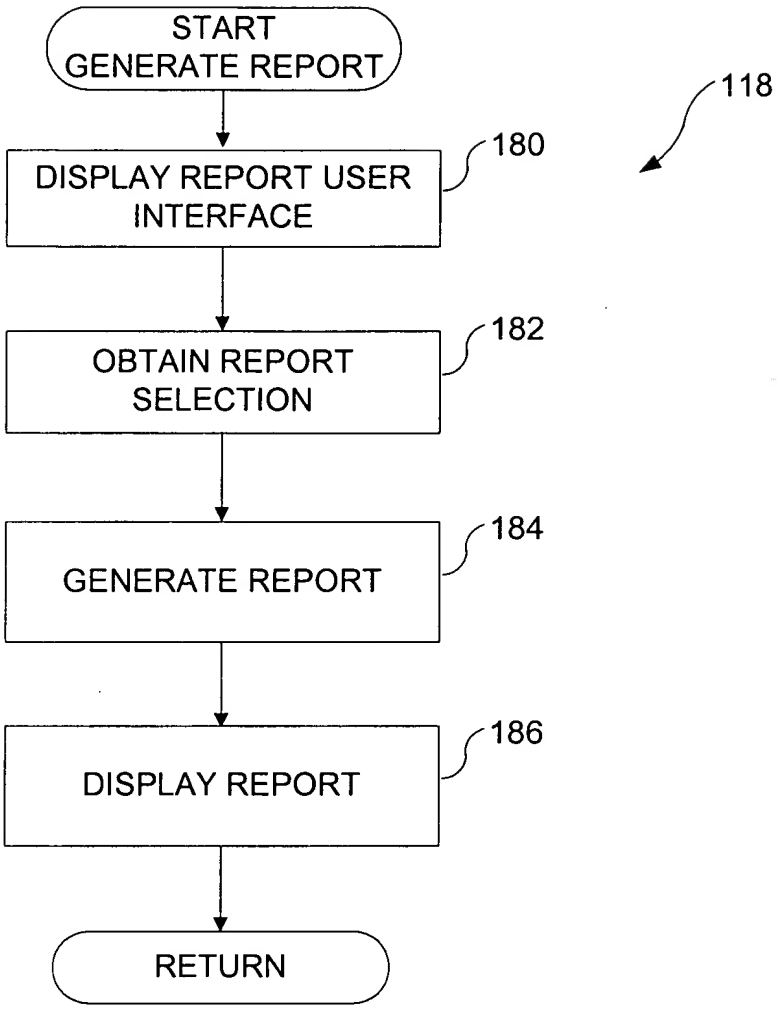
START
GENERATE REPORT
118
180
DISPLAY REPORT USER INTERFACE
182
OBTAIN REPORT SELECTION
184
GENERATE REPORT
186
DISPLAY REPORT
RETURN

FIG. 17

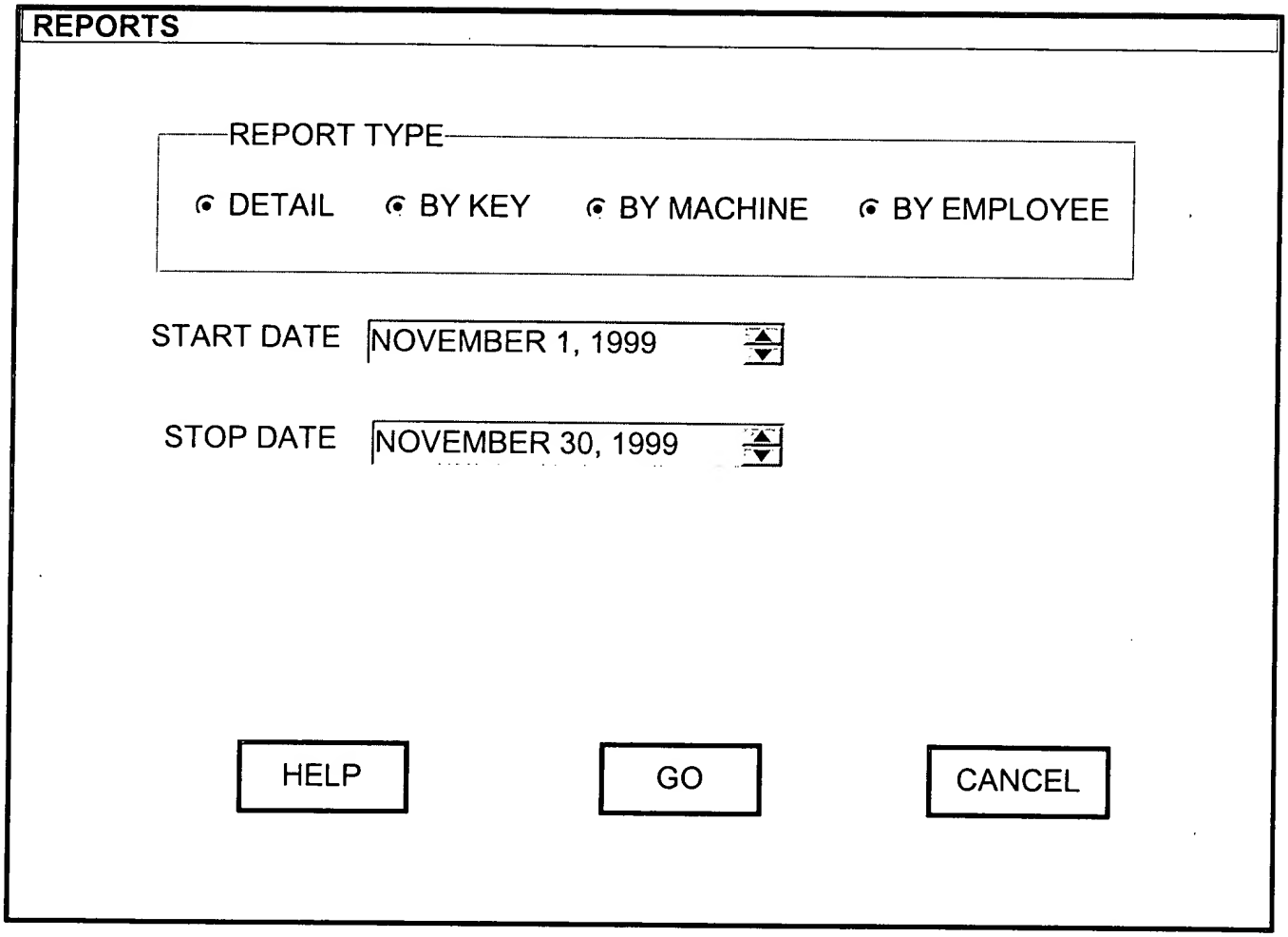
REPORTS
REPORT TYPE
DETAIL
BY KEY
BY MACHINE
BY EMPLOYEE
START DATE
NOVEMBER 1, 1999
STOP DATE
NOVEMBER 30, 1999
HELP
GO
CANCEL

FIG. 18

REPORTS

DATE	MACHINE ASSET NUMBER	EMP. NUMBER	KEY ID	TIME
11/07/99	SC32014424	E0004	K0001	08:22:00 AM
11/08/99	SC32014424	E0004	K0001	08:22:00 AM
11/09/99	SC32014424	E0004	K0001	06:33:00 AM
11/10/99	SC32014424	E0004	K0001	03:55:00 AM
11/11/99	SC32014424	E0004	K0001	06:55:00 AM
11/07/99	SC32014425	E0003	K0002	10:33:00 AM
11/08/99	SC32014425	E0003	K0002	10:33:00 AM
11/09/99	SC32014425	E0003	K0002	05:22:00 AM
11/10/99	SC32014425	E0003	K0002	12:45:00 PM
11/11/99	SC32014425	E0003	K0002	05:22:00 AM
11/07/99	SC32014426	E0002	K0003	03:20:00 AM
11/08/99	SC32014426	E0002	K0003	09:55:00 AM
11/09/99	SC32014426	E0002	K0003	09:55:00 AM
11/10/99	SC32014426	E0002	K0003	04:55:00 AM
11/11/99	SC32014426	E0002	K0003	04:33:00 AM
11/07/99	SC32014427	E0001	K0004	06:30:00 AM
11/08/99	SC32014427	E0001	K0004	01:55:00 AM
11/09/99	SC32014427	E0001	K0004	06:47:00 AM
11/10/99	SC32014427	E0001	K0004	06:22:00 AM

CLOSE

PRINT

FIG. 19